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Research Highlight

Recent changes in evidence-based, non-pharmacological treatment recommendations for acupuncture and Tai Chi for knee osteoarthritis

Songning Zhang

Biomechanics/Sports Medicine Laboratory, Department of Kinesiology, Recreation and Sport Studies, University of Tennessee, Knoxville, TN 37996, USA

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Osteoarthritis (OA) is the most common form of arthritis. The knee and hip joints are the most common sites for OA, and knee OA is more prevalent than hip OA.¹ Knee OA patients often suffer pain, functional disability, articular cartilage wear and related joint space narrowing. Among U.S. adults, 46.4 million have physician-diagnosed arthritis representing 21.6% of the U.S. population, and 8.3% (17.4 million) had activity limitations attributable to arthritis.² It is estimated that by 2030, the number of physician-diagnosed arthritis cases will reach 67 million, and 25 million will have arthritis-attributable activity limitations.² Although 7.9% of U.S. adults aged 18–44 years have arthritis, this percentage increases to 29.3% and 50.0% for adults between 45 and 64 years and older than 65 years, respectively. Currently, there is no cure for this degenerative disease.³ The economic and functional impacts of this disease have become an increased burden for society and individuals. The treatment strategies for knee OA often are aimed at reducing pain, improving physical function, decreasing disability, and limiting OA progression.^{1,4,5}

Over the two decades, several national and international medical organizations including the American College of Rheumatology (ACR), European League Against Rheumatology (EULAR), Osteoarthritis Research Society International (OARSI), and National Institute of Health (NIH) have published evidence-based guidelines for the management of knee OA.^{3–8} These guidelines are mostly evidence-based with expert consensus.^{1,3,4} The treatment recommendations from these guidelines include non-pharmacological and pharmacological therapies, intraarticular injections, and surgical procedures including arthroscopy, osteotomy and total/unicompartmental

knee replacement.^{4–7,9} A combination of pharmacological and non-pharmacological treatments is commonly recommended in clinical practice and is universally recommended in existing guidelines for the management of knee OA.^{4,5} The non-pharmacological therapies commonly include patient education, self-management programs, personalized social support through telephone contact, weight loss (if overweight), aerobic exercise programs, physical therapy, range-of-motion exercises, muscle strengthening, transcutaneous electrical nerve stimulation (TENS), electromagnetic field therapy (EFT), acupuncture, ultrasound, laser, spa, assistive devices for ambulation, patellar taping, the appropriate footwear, lateral-wedged insoles (for genu varum), bracing, occupational therapy, joint protection and energy conservation, and assistive devices for activities of daily living.^{3–5} In earlier guidelines,⁶ acupuncture, TENS, EFT, ultrasound, laser, bracing/taping, and footwear and orthotics were not usually recommended as non-pharmacological treatments. Among the non-pharmacological recommendations, patient education, muscle strengthening, aerobic and range of motion exercises and walking aids received the highest support.⁵

Chinese acupuncture as a knee OA treatment alternative first appeared in the knee OA guidelines in 2000⁷ and since then, has been included in more recent recommendations.^{4,5,8,9} In an earlier systematic review of OA, it was found that seven of the studies included reported positive results for acupuncture treatment, and six reported non-significant results.¹⁰ The NIH OA working group made the evidence-based conclusion that “the research to date on the efficacy of acupuncture in osteoarthritis is inconclusive but promising”.⁷ In a recent meta-analysis of acupuncture for knee OA, patients receiving acupuncture showed short-term improvements in pain (effect size (ES) = −0.96) and function (ES = −0.93) as compared to patients in a waitlist control group.¹¹ However, when compared to a sham control group, acupuncture showed diminished short-term effects on pain (ES = −0.35) and function (ES = −0.35). The ES for pain relief was further reduced at 6 months after treatment. In a more recent review of 16 qualified randomized control trials (RCT) for knee OA, it was shown that the external validity was inadequate in the

E-mail address: szhang@utk.edu.

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trial setting, treatment providers and statistical reporting.¹² The most commonly-used acupoints were ST34, ST35, ST36, SP6, SP9, SP10, GB34, Xiyian, and Ah Shi. The acupuncture treatment usually involved 20 min per treatment session, two sessions per week, and 10–15 sessions in total. In its most recent evidence-based guideline, the ACR conditionally recommended traditional Chinese acupuncture for knee OA patients.⁹

Tai Chi (or Tai Ji) was not included as a non-pharmacological treatment in the majority of the recent guidelines for knee OA treatment from the ACR, NIH, EULAR, and OARSI.^{3–8} However, the most recent guideline from the ACR for knee OA included Tai Chi as a recommended non-pharmacological treatment.⁹ The guideline was developed based on systematic literature reviews (up to December 2010) and a technical expert panel. It conditionally recommended Tai Chi as one of the non-pharmacological treatments among others such as medial wedge insoles for valgus knee OA, subtalar strapped lateral insoles for varus knee OA, medially directed patellar taping, manual therapy, walking aids, thermal agents, self-management programs, and psychosocial interventions. This recommendation was mainly based on a recent systematic review¹³ and a Tai Chi RCT.¹⁴ Among the 10 studies included in the review, the ES for pain reduction after Tai Chi intervention ranged between 0.28 and 1.67.¹³ An RCT performed by Wang et al.¹⁴ had 20 patients in the Tai Chi group and 20 controls, and showed that the patients in the Tai Chi group had an ES of 1.17 (95% confidence interval: 0.50–1.84). It was also found that the Sun style was most commonly used (in 4 out of 10 studies) for knee OA interventions, whereas the Yang style (used in 3 out of 10) achieved the best results.¹³ The Sun style uses slow and gentle motions with a higher body posture than other Tai Chi styles, and was therefore considered to be better for OA patients. However, the Yang style is the most popular Tai Chi form practiced worldwide.

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